

REMARKS

In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

The Office has rejected claims 17-20 and 57-60 under 35 U.S.C. 112, first paragraph, asserting there is no a written description of converting at least one partial differential equation system included in a combined system of partial differential equations from coefficient to general form.

The Office's attention is again respectfully directed to FIGS. 9 and 11 and page 54, lines 4-19 in the above-identified patent application which illustrate and disclose an example of the formula that may be used in an embodiment in the conversion of at least one partial differential equation system included in the combined system of partial differential equations from coefficient to general form. Applicant asserts that with this discussion on page 54, lines 4-19 and the exemplary formula set forth in FIG. 11 it would be readily apparent to one of ordinary skill in the art how to convert at least one partial differential equation system included in the combined system of partial differential equations from coefficient to general form. To illustrate how this would be readily apparent to one of ordinary skill in the art, Applicant has set forth below a simple example using a hypothetical selected string representation for the expressions of the coefficients of a problem written in coefficient form. In this hypothetical example, the indices l , k , and m just run over the single value 1, meaning there is just one equation, one dependent variable, and one constraint. Additionally, in this hypothetical example, there are two space dimensions, that is, the indices j and i runs from 1 to 2. The symbolic expressions for the coefficients be represented by strings as follows:

$$c_{1111} = "c11"$$

$$c_{1112} = "c12"$$

$$c_{1121} = "c21"$$

$$c_{1122} = "c22"$$

$$\alpha_{111} = "a111"$$

$$\alpha_{121} = "a112"$$

$$\gamma_{11} = "ga11"$$

$$\gamma_{12} = \text{"ga12"}$$

$$\beta_{111} = \text{"be111"}$$

$$\beta_{112} = \text{"be112"}$$

$$a_{11} = \text{"a11"}$$

$$f_1 = \text{"f1"}$$

$$g_1 = \text{"g1"}$$

$$q_{11} = \text{"q11"}$$

$$h_{11} = \text{"h11"}$$

$$r_1 = \text{"r1"}$$

Applying the formula in FIG. 11 to directly derive the string representing the expressions for the same problem in the general form:

$$\Gamma_{11} = \text{"-c11*u1-c12*u2-a1111*u+ga11"}$$

$$\Gamma_{12} = \text{"-c21*u1-c22*u2-a1112*u+ga12"}$$

$$F_1 = \text{"f1-be111*u1-be112*u2-a11*u"}$$

$$G_1 = \text{"g1-q11*u"}$$

$$R_1 = \text{"r1-h11*u"}$$

where the strings u , u_1 , u_2 , represent the single dependent variable and its x - and y -derivative, respectively. The general case where l , k , and m runs over several values, just generates more expressions and is not more difficult to implement. Accordingly, this hypothetical example illustrates why FIGS. 9 and 11 and page 54, lines 4-19 in the above-identified patent application describes what is needed to convert from coefficient to general form to someone of ordinary skill in the art. In view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 17-20 and 57-60.

The Office has rejected claims 1-33, 35-36, 39-73, and 75-101 under 35 U.S.C. 102(b) as being anticipated by FEMLAB 1.0 product documentation, claims 34 and 74 under 35 U.S.C. 103(a) as being unpatentable over FEMLAB 1.0 product documentation in view of PDE Toolbox, and claims 37-38 and 77-78 under 35 U.S.C. 103(a) as being

unpatentable over FEMLAB 1.0 product documentation in view of “Object Oriented Programming.”

FEMLAB 1.0 product documentation, PDE Toolbox, and “Object Oriented Programming,” alone or in combination, do not disclose or suggest, “representing each of a plurality of systems as two or more selected application modes modeling physical quantities of said each system . . . determining a representation of a partial differential equation system for each of the two or more application modes corresponding to one of said plurality of systems” as recited in claims 1 and 42 or “selecting two or more of the user-defined application modes . . . determining a representation of said partial differential equation system for said selected two or more user-defined application modes of said associated model” as recited in claims 82 and 92.

The Office cites to FEMLAB User Guide pages 1-6 and 1-7 in the FEMLAB 1.0 product documentation, however in those citations and in the other cited prior art only a single application mode can be selected. For example, the Office’s attention is respectfully directed to FEMLAB User’s Guide page 1-6 which states, “to start creating a new model you click on the New tab and choose the application mode you want to work in.” Although multiple application modes are shown, only one can be selected. Accordingly, the cited prior art only discloses selecting a single application mode that is transformed into a system of partial differential equations.

In sharp contrast, with the present invention a user can select a combination of two or more application modes, combine these, and derive a corresponding system of PDEs. The combination of two or more application modes typically represent different physics phenomena, such as heat transfer, structural mechanics, or fluid dynamics. Accordingly, in view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 42, 82, and 92. Since claims 2-41 depend from and contain the limitations of claim 1, claims 43-81 depend from and contain the limitations of claim 42, claims 83-91 depend from and contain the limitations of claim 82, and claims 93-101 depend from and contain the limitations of claim 92, they are distinguishable over the cited references and are patentable in the same manner as claims 1, 42, 82, and 92.

In view of all of the foregoing, applicant submits that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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Gunnar G. Leinberg
Gunnar G. Leinberg
Registration No. 35,584

NIXON PEABODY LLP
Clinton Square, P.O. Box 31051
Rochester, New York 14603-1051
Telephone: (585) 263-1014
Facsimile: (585) 263-1600

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